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2D Radiation MHD Simulations of Neon-Argon SATURN Z-pinches* J.H. Hammer, J.L. Eddleman, K. G. Estabrook, M. Foord, S. Maxon, P. Springer, M. Tabak, A. Toor, K. Wong and G.B. Zimmerman; *Lawrence Livermore National Laboratory*,, J. S. De Groot, *UC Davis*. We have extended previous modeling of well-characterized neon-argon z-pinches driven by the SATURN accelerator at SNL. The entire pinch length is modeled and non-LTE (local thermodynamic equilibrium) effects are included. The initial density distribution is given a parabolic variation in z to reproduce the observed "zippering" and a 1% random perturbation to stimulate Rayleigh-Taylor (RT) instability. RT modes grow to large amplitude, as observed experimentally. Stagnation conditions differ markedly for the LTE (max. ρ ~ few g/cc) and non-LTE cases (max. ρ ~ few x 10^{-2} g/cc). The difference is due to reduced radiative loss in the non-LTE case that results in higher temperatures, higher plasma pressures and a softer implosion. Remaining differences with experiment (max. ρ ~ few x 10^{-3} g/cc) may be due to 3D effects.

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